REMARKS

These remarks are in response to the Final Office Action mailed June 18, 2004. Claim 15 has been canceled without prejudice to Applicants' right to prosecute the canceled subject matter in any divisional, continuation, continuation-in-part, or other application. Claims 14, 28, 30-31 and 33 has been amended to incorporate the subject matter of claim 15, thus no new matter has been introduced that would require an additional search. Claims depending from claim 15 have been amended to depend from claim 14. No new matter is believed to have been introduced.

I. INTERVIEW SUMMARY

Applicants representative, Joseph Baker, kindly thanks Examiner Monshipouri for her time in discussing the pending rejections by teleconference on September 10, 2004. The cited references and claims were discussed but no agreement was reached.

II. REJECTION UNDER 35 U.S.C. §103

Claims 8-11, 14-24, 28, 30-31 and 33-34 stand rejected under 35 U.S.C. §103 as allegedly unpatentable over Kawarabayasi et al., in view of current enzyme assay techniques. Applicants respectfully traverse this rejection.

The Examiner's position is two fold: (i) first, that the structural functional characteristics of the polypeptide are "inherent" to the β-glycosidase of Kawarabayasi; and (ii) second that a person skilled in the art would have identified the conditions necessary for activity of the enzyme using routine skill.

Applicants submit that "a retrospective view of inherency is not a substitute for some teaching or suggestion supporting an obviousness rejection." *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993). In other words, "[o]bviousness cannot be predicated on what is unknown." *In re Spormann*, 363 F.2d 444, 448 (C.C.P.A. 1966). Here, the Examiner has indicated that a person of skill in the art would have "readily known (guess)" that the enzyme is membrane bound. If a person would have had to guess, then the membrane domain could not have been readily known and thus is not a recognized feature of the enzyme. In support of this position, the

Applicants provide the attached Declaration by Dr. Matsui and the attached Andersson et al. reference which teaches that the mere review of an amino acid sequence would not necessarily teach or suggest a transmembrane (TM) domain. Andersson et al. shows that the membrane-binding domain cannot be predicted from the amino acid sequence (see 2nd paragraph in the left column on page 21). This is contrary to the motivation suggested in the Final Office Action and is provided as substantive evidence that the Patent Offices' position is in error.

Applicants submit that based upon the teachings in the art, one of skill would not have been able to "readily know" the inherent feature of the glycosidase and thus could not have arrived at the assay conditions. The "inherent" properties of the Kawarabayasi et al. glycosidase were not known and would not be readily apparent to the skilled person in the art. The Examiner is again respectfully reminded that obviousness cannot be predicated on what is unknown.

Furthermore, the Office Action suggests that determining the substrate specificity and the assay conditions is a matter of routine practice and thus Applicants' claimed invention would allegedly be obvious based upon Kawarabayasi et al. Applicants respectfully submit that it appears the fact that Applicants' claimed invention utilizes *substrates that have not been demonstrated for any other β-glycosidase* have been disregarded. The Examiner is again directed to the attached Declaration by Dr. Matsui and the attached reference, "Novel substrate specificity of a membrane-bound β-glycosidase from hyper thermophilic archaeon *Pyrococcus horikoshii*", FEBS Letters 467 (2000), 195-200.

The β-glycosidase as set forth by the above-identified application has a novel substrate specificity with k_{cat}/K_m values high enough for hydrolysis of β-glycosides with long alkyl chain at the reducing end (see, e.g., page 19, lines 11-12 of the specification). The β-glycosidase of the invention also exerts its enzyme activity even at high temperatures and maintains the stability in organic solvents (See, e.g., Figure 2, and page 21, line 6).

Table 2 of Appendix A shows that the subject specificity of the β-glycosidase of the invention is completely different from that of a similar β-glycosidase from a related thermophilic archaeon. No other β-glycosidase having the substrate specificity as that of the β-glycosidase disclosed and claimed in the above identified application has been reported. Thus, what was not

known cannot be a matter of routine skill in the art. Here, the substrate specificity of the β-glycosidase was not known and therefore could not reasonably be expected to be assayed or determined by one of skill in the art of biochemistry by commonly used assay techniques as suggested in the Final Office Action.

Applicants submit that Kawarabayasi et al. do not teach each and every element of Applicants' claimed invention. In order to overcome the deficiencies of Kawarabayasi et al., the Patent Office combines the knowledge of one of skill in the art and the inherent characteristics of the *in silico* sequence disclosed by Kawarabayasi et al. to arrive at Applicants' claimed invention. Applicants have provided evidence that the *in silico* derived sequence would not demonstrate the inherent characteristics of a TM domain and thus one of skill in the art would not arrive at the assay conditions using a detergent. In fact, one of skill in the art reviewing the *in silico* sequence would have no motivation to use a detergent in the assay system. Furthermore, one of skill in the art would have no motivation to use long chain alkyls in the assay systems because there were no previously known β-glycosidases that would hydrolyze such molecules. For at least the foregoing reasons Applicants' claimed invention is non-obvious over Kawarabayasi et al. in view of the general skill in the art.

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Respectfully submitted,

Date: 10/12/04

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